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SCIENTIFIC BOOKS.

A Laboratory Manual of Botany. Outlines and Directions for Laboratory and Field Work in Botany in Secondary Schools. By OTIS W. CALDWELL, Ph.D. New York, D. Appleton & Company. 1902. Pp. ix+107.

This little book has for its chief characteristic a serious though perhaps not wholly successful attempt to give organization and direction to elementary work in plant ecology. Certainly the author deserves credit for making the attempt, for ecology will not be on a sure footing in secondary education until it becomes organized, and until the problems which are set have a definite character, and are commensurate with the mental ability of secondary students. As a general criticism pertinent to this remark we would be inclined to say that some of the work indicated is not above the abilities of students in the earlier grades, notably work in seed distribution and the like; while other parts of it are beyond the opportunities, certainly, if not the general intelligence of secondary students. At least, this is the feeling that the reviewer has in regard to the study of the ecology of plant societies.

The work is divided into two parts, consisting of sixty-two and forty-five pages, respectively, the first dealing with plants at work, the second with the structures of plants as they have developed in relation to the problems of nutrition and reproduction. Examining the second part at once, we do not notice that it deviates notably from the treatment of plants in the 'type course' as outlined in a good many text-books. We feel that the author has not indicated sufficiently clearly a definite line of thought, nor has he made, in some instances, the best choice of material. This appears notably in the treatment of the Hepaticæ, among which, as every botanist knows, we may find as interesting and instructive a series of types bearing on the general features of the evolution of the plant body, as may be found in the whole plant series. The study of such material may, we believe, very profitably be substituted for that suggested, viz., that of *Marchantia*, a by no means satisfactory type for the group

when standing alone, on account of its very high degree of specialization.

Turning to the first part, we may consider it as a guide to laboratory and field work made necessary by a previously published work, Coulter's 'Plant Relations,' and it has, among others, the merit in particular that it puts the material and problems in, for the most part, fairly definite form. The reviewer cannot admit to have been won over as yet to belief in a course in ecology as an elementary course for the secondary school. He therefore sees much more to criticize than is, perhaps, wholly justified except upon general grounds. Such criticism applies therefore chiefly to the subject matter rather than to the book before him. For example, one is almost oppressed by the amount of knowledge which a student must be assumed to have in order to explain ecological problems placed before him. The work becomes, then, merely observational, or a mass of unanswerable questions. If the former, better in the elementary school; if the latter, better that it should be a subsidiary part of the course rather than the backbone, so to speak. Again, it would seem that the results which accrue from a lesson do not always justify the amount of material used.

The author that sets before himself the task of indicating problems in question form has not chosen the easiest one. Good questions are good things—among the best means to stimulate and guide the thought of the student. In this particular Dr. Caldwell has done well. The questions are, for the chief part, within the range of the student, and direct the mind from one observation to another in a satisfactory manner. The form of the question is sometimes unfortunate, pedagogically considered. 'Could,' introducing a question, involves deduction unnecessarily, that is, where the inductive method is the only sure one for the beginner at least.

The outlines will have, too, a stimulating effect upon field work, which should thereby be enhanced in value. This, by the way, is a feature of merit in the second part, in which field study is suggested and outlined, as for example in connection with the Algæ.

An introductory chapter containing some

suggestions for the equipment of the laboratory, and the use of the microscope, with, at the end of the volume, reference lists of dealers and materials, complete the volume, and increase its usefulness for secondary teachers and students, to whom it is on the whole by no means ill adapted. FRANCIS E. LLOYD.

The Cyclopedia of American Horticulture.

By L. H. BAILEY and WILHELM MILLER. Comprising suggestions for cultivation of horticultural plants, descriptions of the species of fruits, vegetables, flowers and ornamental plants sold in the United States and Canada, together with geographical and biographical sketches. Vol. IV., R-Z. New York, The Macmillan Company. 1902. Pp. xxx+1487-2016; pl. 31-50; ff. 2060-2800.

Professor Bailey is to be congratulated on the completion of a work that will long stand as one of the monuments of horticultural progress, useful alike to the gardener, the student of cultivated plants and the seeker after general information relating to such plants.

The task he set himself was a hard one, for unless arbitrarily limited the field is a large one, the details intergrading and of unequal importance, and almost every step is beset with nomenclatorial and other pitfalls, between which a safe course is all but impossible because so many of the difficulties admit of only subjective solution which, when opinions differ, cannot please every one. With the good judgment but positive action for which he is noted, he has handled elaborate questions conservatively and as consistently as could be expected, considering that the several articles have been written by many persons whose opinions could hardly be reduced to a uniform level on any matter of policy.

The more notable parts of the concluding volume are the editor's preface, including a history of the planning and execution of the work and an outline for proposed supplements, and the articles on railroad-gardening, *Rhododendron*, *Ribes*, *Rosa* and rose, *Rubus*, *Salvia*, *Saxifraga*, *Scilla*, *Sedum*, seedage, *Selaginella*, *Sempervivum*, shrubbery, *Sorbus*,

Spiræa, spraying, storage, strawberry, *Syringa*, tomato, transplanting, trees, *Tulipa*, *Ulmus*, *Vaccinium*, vegetable gardening, *Verbena*, *Viburnum*, village improvement, vines, *Viola* and violet, *Vitis*, walnut, wild garden, winter protection, and *Zea*. W. T.

The Science of Penology: The Defence of Society against Crime. By HENRY M. BOIES.

New York and London; G. P. Putnam's Sons. 1901. Pp. 459.

The author of this book approaches his subject from the practical rather than from the scientific side, as is indicated at the outset by the fact that he is a member of the Board of Public Charities and of the Committee of Lunacy of the State of Pennsylvania. He makes no pretentious claims to originality; he wishes simply to 'collate and systematize' what others have done with a view to awaken a wider interest in the rational treatment of criminals and to assist those who make and execute the laws against crime. The really interesting and significant point about the book is that in a work which thus 'aims at practice' and is written by a practical man, the standpoint of those who during the last quarter of a century have sought—amid the ridicule of practical men—to put criminology on a scientific basis, is definitely accepted, and accepted almost as a matter of course. It is sufficient to mention the headings of the three sections into which the book is divided: Diagnostics, Therapeutics and Hygienics. In other words, from a book to which is attached the old-fashioned label of 'penology,' the subject of punishment is simply omitted altogether. At one point, it is true, the author would appear to admit the idea of punishment in so far as it may be of therapeutic value, but on the whole he has nothing whatever to say to it. "Criminal codes as they exist are," he states, "in the light of twentieth century intelligence, a conglomeration of penalties of various degrees of atrocity, irrationality, absurdity and inutility. They are the relics of blind social struggles against social evils, useful chiefly as antiquities, to be collected with thumb-screws, iron boots, racks, and torture wheels in mu-